REMARKS/ARGUMENTS

An amended abstract has been presented in response to the Examiner's request.

Claim 1 has been amended to incorporate the subject matter of dependent claim 4, which has been cancelled. Amendments have also been made to clarify antecedent basis and to address the points raised in paragraphs 4 and 6 of the Official Action. With regard to the phrase in claim 1 "the corresponding n data packets in the aggregate multiplexed signal" applicant believes that this phrase is not incomplete and should be clear from a reading of the claim. In particular, this phrase follows the step of "selecting" and defines what it is that is selected.

In response to the Examiner's comments in paragraph 1 concerning a priority claim, applicant points out that priority of France Application No. 0214637 filed November 22, 2002 was timely claimed on page 2 of the Utility Patent Application Transmittal that accompanied the application as filed.

Claims 1 to 8 have been rejected under 35 USC 103(a) as being unpatentable over Ge et al. Publication US 2002/0057861 in view of Chang et al. Publication US 2002/0146027. Chang et al. is relied upon only to show that encoding and modulating are known.

Applicant submits that the technique described in Ge et al. is quite different from the invention defined by claim 1 as amended for several reasons.

The optical switch described by Ge at al. has N fibers 12, each carrying up to n wavelengths ([003] to [0033]). Header information is extracted from each data packet before the data packet arrives at input demultiplexers 14, and this information is forwarded to Control Unit 20 [0038]. Each incoming data packet is assigned a different wavelength by input wavelength converters 16 [0033] and [0067].

From input wavelength converter 16 [0044], data packet payloads each having a different wavelength are forwarded to one of N optical space switches 18 (one for each input fiber 12) each of which comprises n input splitters 22 corresponding to the n wavelengths carried on each input fiber 12 [0045], which in turn feed input Semiconductor Optical Amplifiers (SOA) 24 that operate as on/off switches that are operated by signals from the Control Unit 20 [0046].

Delay buffers 32 [0048] are provided to avoid conflicts between incoming data packets

having the same output destination, by providing different levels of delay.

Each input coupler 26 is fed by SOAs 24 that couple together all the data packets that require the same amount of delay ([0049] to [0051]). Buffer couplers 28 each having N inputs are used to couple the input couplers 26 to the delay buffers 32.

Once the delay buffers 32 have inserted the appropriate level of delay, all the data packets (with potentially n x N different wavelengths) are coupled together by buffer output coupler 34 into combined signal 39 [0054].

An output splitter 36 [0056] splits the combined signal into N individual signals each carried on N output channels 38 that feed N output demultiplexers 40.

Output demultiplexers 40 [0059], one for each of the N output fibers 48 separate out the different wavelengths carried with combined signal 39, hence up to n.N individual fibers 43 (one of each of the n.N possible data packet wavelengths) for each of the N output demultiplexers, which means $n.N^2$ fibers 43.

Control Unit 20 provides a control signal to output SOAs 42 (one for each fiber 43) to allow a particular wavelength to pass or be absorbed.

Output wavelength converter 44 converts the wavelength of a data packet (e.g. back to the original wavelength) [0060] and [0068] and output couplers 46 combines all of the data packets having selected wavelengths.

Extracted header information is reassembled with the respective data packet payload.

Electrical to optical converters 60 of Control Unit 20 convert the header information back to an optical format [0043] to be reassembled with its associated data packet payload.

To summarize, Ge et al. demultiplexes the data packets and switches all the packets inside the switch.

In the process that is described in the present Application, the signals of each beam are identified by a beam code ω_l (or frequency or wavelength) corresponding to the uplink beam (l varying between 1 and N), hence a total of N wavelengths (col. 10, l. 27-31), and these wavelengths are used for a preliminary selection of the beams (input multiplex) having packets to be routed to a given channel of the output signal. This preliminary selection is based on this code ω_l. It is followed by a channel selection to select the desired packets (packet selection)

from the N packets of the primarily selected beam, to route them to the said given channel in the output signal.

The resulting architecture is much less complicated because it requires only N wavelengths instead of n.N in Ge et al. and also it allows to solve the problem of contention without using buffer memories, by simply providing the output multiplexers with (M+L) output channels with L>0.

In the Communication (p. 7-8), the Examiner makes an inaccurate analysis of Ge et al. as regards claims 4-6., because in Ge et al. there is a wavelength for each single packet so that each packet is identified only by its wavelength, whereas in the claim, there is a code for the input multiplex and the identification of a packet is performed in two steps, namely, a preliminary one where the input multiplex is identified by its code ω_1 and selected and a second step of packet selection where the packet is identified in the preselected uplink to route it to the appropriate channel of the output signal.

As stated above, in Ge et al., demultiplexers 14 demultiplex the data packets and SOAs 24 switch all the packets inside the switch 18 in one step under the operation of Control Unit 20. As already said, Ge does not provide a frequency corresponding to the input multiplex, but only one frequency for each packet.

Because the packets are directly identified by their wavelength, the preliminary selection does not exist in Ge et al., and for that matter the packet selection from the selected input multiplexes does not exist either.

Since there is no preliminary selection in Ge et al., claim 5 cannot derive from this document. As specified in claim 5, a code frequency or wavelength is attributed to each input multiplex, and the preliminary selection involves demultiplexing using said code frequency or wavelength (see p. 13, l. 4-15).

Since in Ge, a packet is identified only a single wavelength, a first and second wavelength demultiplexing cannot occur, as incorrectly concluded by the Examiner.

For the reasons noted, the claims of record patentably distinguish over the cited prior art. Favorable reconsideration by the Examiner and formal notification of the allowance of all claims are earnestly solicited.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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